

CLAIMS:

1 1. A method for reducing the number of messages to be processed by a control
2 processor in a load balancer comprising the steps of:
3 receiving a request to establish a TCP connection from a client by a network
4 processor in said load balancer;
5 establishing said TCP connection with said client via handshake messages
6 between said network processor and said client;
7 receiving a request message from said client;
8 bundling said request message and information from said handshake messages
9 involved in establishing said TCP connection by said network processor; and
10 transmitting said bundled message to said control processor by said network
11 processor.

1 2. The method as recited in claim 1 further comprising the steps of:
2 identifying a server in a server farm to service said client's request message by
3 said control processor;
4 bundling said client's request message and a control message by said control
5 processor; and
6 transmitting said bundled message comprising said client's request message
7 and said control message to said network processor.

1 3. The method as recited in claim 2, wherein said server in said server farm is
2 identified using information extracted from said client's request message.

1 4. The method as recited in claim 2, wherein said control message comprises
2 information used to enable said network processor to create entries in a forwarding
3 table to ensure packets from said client are transmitted to said server and to ensure
4 packets from said server are transmitted to said client.

1 5. The method as recited in claim 2, wherein said control message comprises
2 information to establish a TCP connection between said load balancer and said server.

1 6. The method as recited in claim 2 further comprising the steps of:
2 receiving a request to terminate said TCP connection from said server by said
3 network processor;
4 facilitating said termination of said connection between said server and said
5 client;
6 bundling information regarding a series of closed connections by said network
7 processor; and
8 transmitting said bundled message regarding said series of closed connections
9 to said control processor by said network processor.

1 7. The method as recited in claim 6 further comprising the step of:
2 extracting information from said bundled message regarding said series of
3 closed connections by said control processor.

1 8. A computer program product embodied in a machine readable medium for
2 reducing the number of messages to be processed by a control processor in a load
3 balancer comprising the programming steps of:

4 receiving a request to establish a TCP connection from a client by a network
5 processor in said load balancer;

6 establishing said TCP connection with said client via handshake messages
7 between said network processor and said client;

8 receiving a request message from said client;

9 bundling said request message and information from said handshake messages
10 involved in establishing said TCP connection by said network processor; and

11 transmitting said bundled message to said control processor by said network
12 processor.

1 9. The computer program product as recited in claim 8 further comprising the
2 programming steps of:

3 identifying a server in a server farm to service said client's request message by
4 said control processor;

5 bundling said client's request message and a control message by said control
6 processor; and

7 transmitting said bundled message comprising said client's request message
8 and said control message to said network processor.

1 10. The computer program product as recited in claim 9, wherein said server in
2 said server farm is identified using information extracted from said client's request
3 message.

1 11. The computer program product as recited in claim 9, wherein said control
2 message comprises information used to enable said network processor to create
3 entries in a forwarding table to ensure packets from said client are transmitted to said
4 server and to ensure packets from said server are transmitted to said client.

1 12. The computer program product as recited in claim 9, wherein said control
2 message comprises information to establish a TCP connection between said load
3 balancer and said server.

1 13. The computer program product as recited in claim 9 further comprising the
2 programming steps of:
3 receiving a request to terminate said TCP connection from said server by said
4 network processor;
5 facilitating said termination of said connection between said server and said
6 client;
7 bundling information regarding a series of closed connections by said network
8 processor; and
9 transmitting said bundled message regarding said series of closed connections
10 to said control processor by said network processor.

1 14. The computer program product as recited in claim 13 further comprising the
2 programming step of:
3 extracting information from said bundled message regarding said series of
4 closed connections by said control processor.

1 15. A load balancer, comprising:
2 a network processor, wherein said network processor is configured to process
3 fast path packets;
4 a control processor coupled to said network processor, wherein said control
5 processor is configured to process slow path packets; and
6 a memory unit coupled to said control processor and said network processor,
7 wherein said memory unit is operable for storing a computer program for reducing
8 the number of messages to be processed by said control processor;
9 wherein said network processor, responsive to said computer program,
10 comprises:
11 circuitry operable for receiving a request to establish a TCP connection
12 from a client;
13 circuitry operable for establishing said TCP connection with said client
14 via handshake messages between said network processor and said client;
15 circuitry operable for receiving a request message from said client;
16 circuitry operable for bundling said request message and information
17 from said handshake messages involved in establishing said TCP connection; and
18 circuitry operable for transmitting said bundled message to said
19 control processor.

1 16. The system as recited in claim 15, wherein said control processor, responsive
2 to said computer program, comprises:
3 circuitry operable for identifying a server in a server farm to service said
4 client's request message;
5 circuitry operable for bundling said client's request message and a control
6 message; and
7 circuitry operable for transmitting said bundled message comprising said
8 client's request message and said control message to said network processor.

- 1 17. The system as recited in claim 16, wherein said control message comprises
- 2 information used to enable said network processor to create entries in a forwarding
- 3 table to ensure packets from said client are transmitted to said server and to ensure
- 4 packets from said server are transmitted to said client.

1 18. A load balancer, comprising:
2 a network processor, wherein said network processor is configured to process
3 fast path packets;
4 a control processor coupled to said network processor, wherein said control
5 processor is configured to process slow path packets; and
6 a memory unit coupled to said control processor and said network processor,
7 wherein said memory unit is operable for storing a computer program for reducing
8 the number of messages to be processed by said control processor;
9 wherein said network processor, responsive to said computer program,
10 comprises:
11 circuitry operable for receiving a request to establish a TCP connection
12 from a client;
13 circuitry operable for establishing said TCP connection with said client
14 via handshake messages between said network processor and said client;
15 circuitry operable for receiving a request message from said client;
16 circuitry operable for bundling said request message and information
17 from said handshake messages involved in establishing said TCP connection;
18 circuitry operable for transmitting said bundled message to said
19 control processor;
20 circuitry operable for receiving a request to terminate said TCP
21 connection from said server;
22 circuitry operable for facilitating said termination of said connection
23 between said server and said client;
24 circuitry operable for bundling information regarding a series of closed
25 connections; and
26 circuitry operable for transmitting said bundled message regarding said
27 series of closed connections to said control processor.

- 1 19. The system as recited in claim 18, wherein said control processor comprises:
2 circuitry operable for extracting information from said bundled message
3 regarding said series of closed connections.